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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,007	04/18/2001	Mou-Shiung Lin	MEG 01-004	7677

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SAILE ACKERMAN LLC
28 DAVIS AVENUE
POUGHKEEPSIE, NY 12603

EXAMINER	
ZARNEKE, DAVID A	
ART UNIT	**PAPER NUMBER**
2891	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/837,007	LIN ET AL.	
	Examiner	Art Unit	
	David A. Zarneke	2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/27/06*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *55-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *55-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments, see the bottom of page 11, filed 11/27/06, with respect to the rejection of claim 56 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made below.

Specification

The objection to the specification has been withdrawn.

Claim Rejections - 35 USC § 112

The 35 USC § 112 rejection has been withdrawn.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In *re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 55-59 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 53, 58, 59 and 67 of copending Application No. 10/935,451. Although the conflicting claims are not identical, they are not patentably distinct from each other because the combination of claims 53 and 67 of the other application combine to teach all of the limitations of the present claim 55. The new limitations reciting the circuit component is "used to be connected to a substrate comprising a first pad with a sidewall not covered by a solder mask" is an intended use limitation. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations (Ex parte Masham, 2 USPQ2d 1647 (1987)).

Further, these limitation are conventional, as taught by US Patent 5,075,965 (figure 5A).

The remaining claims correspond as follows:

Present Application	10/935,451
56	intended use/US Patent 5,075,965
57	68
58	59

59	58

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 55-59 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 11/389,717. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-3 and 5 of the copending application combine to meet the limitations of claim 1 of the present application.

The remaining claims correspond as follows:

Present Application	11/389,717
56	1
57	6
58	8
59	4

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 55, and 58 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Ohuchi et al. US Patent 6,495,916.

Ohuchi (Figure 9) teaches a circuit component, used to be connected to a substrate comprising a first pad with a sidewall not covered by a solder mask, comprising:

a semiconductor device [1];

a metal pillar [4] over said semiconductor device, wherein said metal pillar has a thickness of between 10 and 100 microns (3, 1+);

a metal layer [14] over said metal pillar, wherein said metal layer has a bottom surface partially covered by said metal pillar and partially not covered by said metal pillar; and

a solder metal [7] over said metal layer, wherein said solder metal is used to be bonded to said first pad.

The phrases "used to be connected to a substrate comprising a first pad with a sidewall not covered by a solder mask" and "wherein said solder metal is used to be bonded to said first pad" are both intended use limitations that don't positively recite the limitations claimed. Therefore, since Ohuchi teaches the positively recited claimed structural limitations, the claimed limitations have been satisfied. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations (Ex parte Masham, 2 USPQ2d 1647 (1987)).

In the alternative, if it can be shown that these limitations are indeed positively recited and therefore given some patentable weight, please note that these limitations are conventional. A skilled artisan would know that connecting a circuit component to a substrate having a pad is what has to be done to make use of the circuit component. For example, see US Patent 5,075,965 (figure 5A).

With respect to claim 58, Ohuchi teaches the semiconductor device comprises a pad [2] and a passivation layer [5], said pad exposed by an opening in said passivation layer, wherein said metal pillar is over said pad.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 56, 57 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohuchi et al. US Patent 6,495,916, as applied to claim 55 above.

Regarding claim 56, while Ohuchi fails to teach the solder metal is bonded to said first pad, it would have been obvious to one of ordinary skill in the art at the time of the invention to bond the circuit component to a pad on a substrate because this is conventional. In order to use the circuit component, it must be integrated with other electrical components. Bonding a circuit component to a pad on a substrate is the next conventional step in the process of making an electrical component. Further, the pad having a sidewall not covered by a solder mask is also conventional. For example, see US Patent 5,075,965 (Figure 5A).

As to claim 57, while Ohuchi fails to teach the distance between an edge of said metal layer and an edge of said metal pillar is greater than 0.2 microns, it would have been obvious to one ordinary skill in the art at the time of the invention to optimize this distance through routine experimentation (MPEP 2144.05).

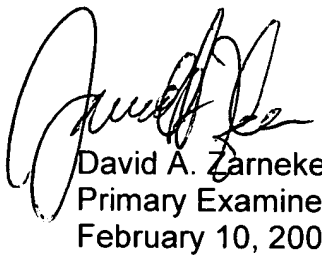
In re claim 59, while Ohuchi fails to teach a barrier between said bump and said pad, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use a barrier between a bump and an underlying surface because it improves the adhesion between the two and to keep the solder from diffusing into the underlying material.

Conclusion

Any inquiry concerning this communication from the examiner should be directed to David A. Zarneke at (571)-272-1937. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, William Baumeister can be reached on (571)-272-1722. The fax phone number where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



David A. Zarneke
Primary Examiner
February 10, 2007